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**WO 02/27618 A2**

(54) Title: PERSONAL MAIL PIECE TRACING AND TRACKING MECHANISM

(57) Abstract:

# PERSONAL MAIL PIECE TRACING AND TRACKING MECHANISM

## BACKGROUND OF THE INVENTION

### *Field of the Invention*

5        The invention relates to methods and apparatus for linking data, and objects of varying kinds, whether electronic or physical or both.

### *Background Information*

Various delivery companies offer services through which packages can be tracked and/or traced. In order to track a package, the intended recipient must first 10 know that the package has been sent, and second have available the package identifier that is assigned to the package by the delivery company. The identifier may be assigned to the package when the package is presented to the company by the sender, or the identifier may be assigned through the use of a pre-coded delivery label that the sender fills out and attaches to the package. Using the package identifier, the intended 15 recipient can check with the delivery service either by telephone or on-line, to determine where the package is currently located, when the package is scheduled for delivery, and so forth. If the package does not arrive on a scheduled date, the intended recipient must then go back on-line or again call the delivery company and, using the assigned identifier, check where the package is, if a new delivery date has been set, and 20 so forth.

If the intended recipient is to receive packages from several companies, he or she must contact the respective senders to obtain the various identifiers, and then contact each delivery company to obtain the relevant delivery information. The recipient must thus keep track of the various package identifiers, the dates which companies are 25 delivering the respective packages, and so forth. Further, as delivery dates change, the intended recipient must again contact the various companies, supply the appropriate

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identifiers, and ask the respective delivery company representatives or query the companies on-line to ascertain the new dates.

Catalog companies may send intended recipients e-mail messages to inform them of expected shipping and/or delivery dates for previously ordered articles. Each 5 time a date changes for a particular order, however, the company must again send the intended recipient an e-mail message to inform him or her of the new date. The company may also inform the intended recipient of the current locations of the packages via e-mail messages, as a way of keeping the intended recipient informed of the expected delivery dates. The intended recipient must thus sort through the e-mail messages relating to various purchases and associate a given e-mail with a particular purchase in 10 order to maintain an updated shipping and/or delivery schedule.

The sender must go through similar steps to trace the packages he or she has sent. If, for example, a particular package is not delivered by a scheduled deadline, the sender first has to learn of the problem and he or she then has to contact the delivery 15 company with a package identifier and ask or query about the current location of the package and new expected delivery dates. Further, the sender has to again follow-up with the intended recipients and/or the delivery companies associated with the respective packages, to determine if the packages are delivered on the new dates, and so forth.

## SUMMARY OF THE INVENTION

20 The invention is a personal tracking and tracing system that provides a user with information relating to the delivery status of packages, catalogs or other mail pieces sent to or by the user through various catalog companies, delivery services, and/or the postal service. The system provides a user with information about the mail pieces through a personal web page, and thus, the user does not need to know identifying 25 numbers for the respective mail pieces. Further, the user does not even need to know that a particular package has been sent before he or she learns through the personal tracking and tracing system to expect a delivery. The system updates the delivery status information, i.e., expected delivery dates, current locations and so forth, based on information supplied by the delivery companies and/or the postal service. Thus, to 30 keep track of the changes to the delivery status, the user has only to check his or her

web page rather than inquire at the various companies or the postal service and/or sort through e-mail messages from them.

The system provides the user with a table that includes an entry for each mail-piece. The table may link related information, such as catalog sale information, magazine subscription offers, bill payment options and so forth to the table entry for a given mail piece. Further, the system may link to the entry more detailed information about the particular mail piece, such as a description or digital image of the contents. The user may then "click" on the links to, for example, view and pay a bill electronically. Also, the system may link to the table entries various attachments, such as related messages from the sender, the delivery company and/or the postal service. A company or an individual sending or delivering the mail piece may thus inform the intended recipient that, for example, a signature or payment is required at time of delivery. Alternatively, or in addition, the attachment may provide a mechanism by which the user can respond to, for example, offers that are contained in the mail piece.

The personal tracking and tracing system allows the user to track and trace packages without having to contact the sender, intended recipient, and/or the delivery company or postal service. Further, the system may link other information to the mail piece delivery status, such as purchase or payment history, related credit card debit or credit information and so forth, to provide the user with confirmation of the completion of a transaction that involves a particular mail piece.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention description below refers to the accompanying drawings, of which:

Figs. 1-8 are screen snapshots of a graphical user interface that is useful in accordance with the personal tracking and tracing system;

Fig. 9 is a flow chart of steps in providing mail piece information to the system;

Fig. 10 is a functional block diagram of an environment in which the system may advantageously operate; and

Fig. 11 illustrates a mechanism for presenting to the system of Fig. 10 a machine-readable user ID.

## DETAILED DESCRIPTION OF AN ILLUSTRATIVE EMBODIMENT

The present invention is particularly directed to methods and apparatus for facilitating the personalized tracking and/or tracing of mail pieces, by which is meant to include letters, catalogs, newspapers, magazines, packages and physical objects of all kinds. It is expected to be of especial use as part of a postal system such as the United States or other Postal Offices, although it is not so limited and has numerous other applications as will be apparent on reading the following detailed description.

As will be seen from the detailed description of a specific embodiment herein, the system provides to a user such as to an intended recipient, whether an individual, a business or organization, etc., a personalized web page that contains delivery status information about mail pieces directed to or sent by the user. The web page also associates with the delivery status information for a given mail piece various related information, such as, the delivery mechanism, i.e., land or air or postal service; mail piece type; and, as appropriate, links to related on-line subscription or catalog offers, payment options and so forth. The table further includes an attachment field in which messages from the sender, postal service or other delivery company may be linked to the mail piece delivery status information.

The delivery status information may be displayed in a table, with entries that are distilled from information provided by the sender, the postal system or other delivery services, and/or the intended recipient. Using the table, the user can readily track and trace the respective mail pieces from the date the mail pieces are provided to, for example, the postal service until the date the mail pieces are delivered by the postal service to the intended recipients.

The invention is explained by means of various screens. Fig. 1 depicts an introductory screen 10 of an exemplary graphical user interface that may be used in accordance with the present invention. The screen is displayed, e.g., on the video monitor of a computer connected to a computer network such as, but not limited to, the worldwide web. The screen summarizes the services that a user may access from the screen. In

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the present instance, five categories of services are provided, namely: My Mail, Virtual Post Office, Network Banking, Directory Services and My Profile. The personal tracking and tracing system described herein is provided under the My Mail category. While the other service categories may have various links to and from the information provided under the My Mail category, we do not otherwise discuss the other services. Certain of the service categories are discussed in a co-pending United States Patent Application entitled METHOD AND APPARATUS FOR LINKING DATA AND OBJECTS and accorded Serial Number 09/865,889 which is assigned to a common assignee and incorporated herein in its entirety by reference.

The screen 10 contains an area 12 for entry of a user name and an area 14 for entry of a password. The name, which may be any sort of user ID, and the user password control access to the My Mail and the other services. The user ID may comprise, for example, the user's given name, an identifier assigned by the system or the user's e-mail address. The password is preferably chosen by the user him or herself, since that access to the personalized services is controlled by the user. An address area 16 displays the address of the site on the web to which the user is connected, that is, the site that is providing the desired services. The site is, for example, initially accessed in the usual manner, i.e., by entering the web address in a browser and pressing "return" on a keyboard, or by clicking on a link to the web address that is presented, e.g., on a website of the postal service or on some sort of other video display. "Button" 15 enables the user to register at the website for the My Mail or other services provided through what is referred to herein as the "Postport System." Button 14 in conjunction with a selection of a service from a list 18 allows the user to access the selected service.

Fig. 2 depicts screen 20 to which a user is directed when button 15 of Fig. 1 is used to sign into the Postport system for the first time. Using the screen 20, a new user provides the requested address and identification information in order to register for the various Postport system services, and thus be assigned a Postport User ID. A user previously registered may be provided access to the screen 20 by selecting the My Profile service from the list 18 on the screen 10 of Fig. 1. Using the screen 20, the registered user may change its address, identification and/or password information. After regis-

tering or updating the registration information, the user selects one of the other services, for example, the My Mail service, using the menu bar 24.

Referring now to Fig. 3 screen 30 depicts an exemplary display that a registered user obtains by selecting My Mail from, for example, the list of screen 10 (Fig. 1) or 5 the menu bar 24 of screen 20 (Fig. 2). The display is essentially a personal web page for the user identified by the user ID 26. The display includes a table 28 with entries 32 for the respective mail pieces that are directed to the user, who in the example is an individual. The table entries are sorted by delivery date, as indicated by the menu bar 29 that is associated with the table. By selecting an appropriate sort category from a list 10 (not shown) that is pulled down using an arrow 31, the entries may instead be sorted by sender, delivery address, if the user has more than one, or by mail type, for example, packages, letters, bills and so forth.

The user may instead view a table that contains information about mail pieces which were sent by the user. To do this the user selects the appropriate table category 15 from a list that is pulled down using arrow 40. The table of outbound mail pieces and the information contained therein are discussed in more detail below with reference to Fig. 7.

Referring still to Fig. 3, the table entries 32 may be viewed in more or less detail by selecting the appropriate view category from a sidebar menu 42. The calendar view 20 category depicts the table entries as mail piece type icons 37 on the appropriate days of a displayed calendar, as discussed in more detail in the co-pending application that is incorporated herein. The detailed view listing displays the respective table entries in more detail, is discussed below with reference to Fig. 6. The icons may further be linked to information that indicates the current locations of the respective packages. 25 Alternatively, the table may include a separate location field (not shown).

The table 28 includes a plurality of fields 34 that contain, for each entry, information relating to the corresponding mail piece. A status field 34a informs the user of the delivery status of the mail piece through the icons 35. If the mail piece has been delivered, the entry includes a checkmark 35a in the status field. For a mail piece that 30 has not yet been delivered, the entry includes in the status field an icon that indicates how the mail piece has been shipped, i.e., by postal air service as indicated by a plane

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icon 35b, or by postal ground service as indicated by a truck icon 35c. Additional icons may be used to indicate other delivery services and/or companies, such as, Fed Ex, UPS, and so forth, or the icons 35 may be linked to the associated delivery service and/or company information.

5        A type field 34b indicates to the user, again through the use of icons 37, the category of mail piece. The mail piece may be a magazine as indicated by the icon 37a, a bill as indicated by the icon 37b, a letter as indicated by the icon 37c, a package as indicated by the icon 37d or a catalog as indicated by the icon 37e, and so forth as indicated by various other icons 37. A delivery field 34c informs the user of the actual or  
10      expected delivery date, while a sender field 34d informs the user of the source of the mail piece. An attachment field 34e displays an associated message that was supplied by the sender of the mail piece and/or the postal service or other delivery company..

15      The type status field 34b includes a "lightening bolt" icon 39 in an entry 32 that includes an attachment that is available to the user only through the Postport system, and is thus not available at, for example, the sender's web site. In the table 28, the entry that corresponds to a letter (icon 37c) from Mom (sender field 34d) includes a lightening bolt icon to indicate that there is a message that is associated with the mail piece through the Postport system. To read the message, the user clicks on the displayed information. The information displayed in the attachment field in a given entry is essentially information that identifies the associated message to the user, much like a Re: line in an email message. Alternatively, the display in the attachment field may be the start  
20      of the message.

25      As another example, the lightening bolt icon 39 associated with the bill (icon 37b) from City Electric (sender field 34d) indicates that an attachment to the entry 32 includes a message that is associated with the City Electric bill and available to the user only through the Postport system. For this entry, the displayed information indicates that the attachment relates to the user's on-line account, and the user simply clicks on the displayed information to read the associated message. The message may, for example, set up the payment transaction through the user's account, and allow a user to  
30      make the payment simply by approving the transaction.

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For those entries 32 without lightening bolt icons 39, the user may instead view the same information on, for example, the sender's web site. The attachment to a magazine (icon 37a) may, for example, be a message about subscription offers that is sent to everyone who receives a copy of a particular magazine. The user can read the 5 attached message if he or she is interested in subscribing or otherwise ignore the message.

The table may also include in a given entry a link to a mechanism that allows the user to respond electronically to, for example, the subscription offer. The link may be included in the message that is available from the attachment field or may be included in information contained in or accessible from the sender field, as discussed below. 10

The sender field 34d includes Postport icons 40 in the respective entries 32 for which the source of the information has been authenticated. Certain sources, such as utilities, may supply certain or all of the mail piece content with a digital signature. 15 The digital signature relates at least to the information that identifies the source of the mail piece. The Postport system uses the digital signature in a conventional manner to verify that the information was sent by the indicated source and, as appropriate, that the content has not been altered.

As an example of using the table 28, the user learns from the first entry 32 in the 20 table of screen 30 that a magazine, as indicated by the icon 37a in the type field 34b, was delivered on the sixth of January 2001, as indicated by the check mark 35a in the status field 34a, and the date in the delivery field 34c. The entry has, as an attachment, a general message concerning subscription renewal that is otherwise available on-line.

Through information contained in or accessible from the sender field 34d, an 25 entry 32 may be further associated with one or more links to a sender company URL, to various associated mail-piece specific information, and/or to mechanisms through which the user can respond electronically to offers included in the mail piece, such as, for example, subscription offers. The user clicks on the information displayed in the sender field and is either directly connected by the links to, for example, a particular 30 URL or, as discussed below with reference to Fig. 9, to other company information as-

sociated with the mail piece through the Postport system. Alternatively, as depicted in Fig. 4, the user may be presented with a pull-down menu 52 of the various links.

Fig. 5 depicts a screen 60 in which a pull-down menu 62 for an entry 32 in the table 28 that corresponds to bill (icon 37b) from City Electric (field 34d) provides to 5 the user links to the web pages associated with various on-line bill payment services offered through City Electric. As discussed in more detail below with reference to Fig. 7, the Postport system can trace such a payment and provide to the user a payment delivery date.

Referring now to Fig. 6, a user may obtain a detailed view of a particular mail 10 piece, for example, the City Electric bill, by highlighting the corresponding table entry 32 and clicking on the detail view listing in the sidebar 44. The system then displays a screen 70, which may include a copy or facsimile 72 of the corresponding mail piece and a list 74 of mail piece particulars, namely, sender, date sent, date received, and relevant information, such as the amount of the bill. The user has options, delineated 15 by buttons 76, of paying the bill now from his or her on-line account, paying later from the account at a specified or unspecified date, or setting a payment policy such as directing that a certain portion of the bill be paid now and the remaining portion of the bill be paid after, for example, the deposit of a paycheck into the user's account. Through the buttons, the Postport system thus cross-links the mail piece information 20 with the on-line account and payment information provided by, in the example, City Electric.

The detailed views of various table entries 32 may include other images such as 25 a copy of a bill, a catalog cover, and so forth. Further, the detailed view may include various mail delivery options that are accessible using the screen buttons. For example, the user may instruct the postal service to throw away future catalogs from a given sender, or re-direct the catalogs to a different address. As discussed in more detail in the co-pending application that is incorporated herein by reference, the Postport system links the selected delivery options with the user ID, and thereafter, follows the delivery instructions with respect to mail pieces directed to the user.

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The mail piece image 72 included in the detailed view may be provided by the source of the mail piece, or alternatively, the image may be provided by the postal service or other delivery service by the scanning of the mail piece.

Referring now to Fig. 7, the Postport system also provides personal tracking and tracing of mail pieces sent by the user. As depicted in screen 100, a table 128 includes entries 132 for the respective mail pieces that the user has sent. The user selects this table from a pull down menu (not shown) using arrow 40 in menu bar 29. The table includes status, type and delivery fields 134a, 134b and 134c that are similar to the fields of the table 28 discussed above with reference to Fig. 1. The information for these fields may be supplied by the postal service or other delivery company when the mail piece is provided to them by the user. In the case of electronic mailings, such as on-line payments, the information may instead be supplied by the company that is the intended recipient.

The table 128 includes a field 134d that specifies the intended recipient. This information may be supplied directly by the user, supplied through a machine readable code on a pre-coded delivery label or, for electronic mailings, supplied by the user or by the intended recipient. The table also includes a field 134e for memos provided by the user and/or the postal service. The user may, for example, type a message into the system when the user is providing the mailing address information for a mailing label, or when he or she is making an electronic payment of a bill.

Using the table 128, the user can track when, for example, an on-line payment was received by a particular company. In the example, the user may trace an on-line payment to City Electric made using the payment option available through the City Electric bill entry 32 in table 28.

The respective table entries 132 may also be linked to other information that the company to which the mail piece is directed maintains by, for example, account, invoice or transaction numbers associated with the respective mail pieces. One such example is depicted in screen 130 of Fig. 8, in which the entry for a return to a particular company includes a display 140 of an associated transaction history. The Postport system links the mail piece with the transaction information based on an associated in-

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voice or transaction code that is supplied by the user on the mailing label of the mail piece, or by the company on a precoded return label.

Using the Postport system, the user may thus have in one table a complete record of a transaction from start to finish, including the dates of the delivery of an ordered article to the user and the return delivery of the article to the company, the dates of the debiting and/or crediting of the transaction to his or her credit card, and so forth. Transaction information may similarly be available from, for example, utility companies that bill the user monthly. The user may thus have at any given time up-to-date billing and payment histories, without having to contact the respective billing companies.

The Postport system can be thought of as giving a mail piece a digital shadow, that is, a link from the physical mail piece to information about the mail piece or associated with the mail piece by the sender, the postal service and/or the intended recipient. The information linked to the mail piece can be address and delivery particulars, a digital copy of the mail piece, a summary of the mail piece, an excerpt from the mail piece, a history of the transactions associated with the mail piece, and so forth. Other information associated with the mail piece can be hyperlinks to source or recipient URLs, and personalized or general message attachments.

As discussed above, the Postport system utilizes a server to acquire and cross-link information from the various mail piece sources and the postal service or other delivery companies. The system then organizes the information into personal web pages for the respective users and, as appropriate, includes therein links to sender URLs on-line accounts and transaction information.

As illustrated in Fig. 9, a company normally performs specific steps in designing and sending out mailings. Typically, a company chooses a mailing list (step 90), designs a mail piece (step 91), addresses and mails the mail piece to the entities on the list by delivering them to, for example, the postal service (steps 93, 95). As applicable, the company may check that the mail pieces are delivered by contacting the postal service or the intended recipients. To take advantage of the tracking capabilities of the Postport system, the company also designs a document, such as an XML document, or a web page that contains the contents of or selected information from the mail piece

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(step 92) and provides the document or web page URLs and the names on the mailing list in an uplink to the Postport system web site or server (step 94). The Postport system then uses the document and associated list to produce entries 32 for the tables 28 (Fig. 3) of the respective users on the list, that is, to cross-link the table fields with the appropriate information based on the users' IDs. As discussed, the table entries also include related Postport system derived information such as associated delivery dates, current mail piece locations, delivery options, and so forth, as well as cross-links to associated on-line accounts, transaction histories and related information provided by the sender. Further, the document or the URLs may contain a link to a mechanism by which the intended recipient can respond electronically to any offers, such as subscriptions offers, included in the mail piece. The Postport system then links the table entries to the users' web pages and on request the system displays the appropriate entries as a table on a given user's web page.

The methods described herein are readily implemented using, e.g., conventional file servers and personal computers, although more powerful computers can, of course, be gainfully employed. The user database is readily prepared using conventional database software such as that supplied by Oracle, Microsoft, and IBM, among others, or by software such as the Escher Group's WebRiposte™ for web-based applications. Communications between users of the system and the hardware components thereof may utilize any form of electronic communication, such as direct wire, wireless, modems, and the Internet, among others.

Figure 10 illustrates an environment in which the system of Figures 1-8 is advantageously used. A Post Office server 170 is connected via a network such as the Internet 172 to one or more postal stations 176, 178 and a number of remote terminals or nodes 174 that run or have access to web browsers that communicate with the server or client executables that communicate directly with the server or with the web browsers. For simplicity, only one such node is shown but it will be understood that that number of nodes to be used is potentially unlimited. Each postal station contains one or more work station nodes 180, 182 which may be interconnected by a network 184. The nodes provide access to the browsers and/or clients that communicate with the server. If desired, printer/scanners 186-190 may be attached to the workstation nodes to enable scanned input and hard-copy output at the nodes. Node 174 may be located

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in the home or office of an individual; nodes 180, 182 are located at the various postal service stations maintained by the Post Office, and are made available to individual users.

The Postal Server may comprise a single server, or be one of a plurality of such servers, preferably interconnected for sharing data. Associated with each server is a database 171 on which the name and other pertinent data such as physical (i.e. street) address, email address, user ID, telephone number, and other such data with respect to each of its users are stored. The Postal Service itself may use the information in this database to associate the information about the mail pieces with the various users. Alternatively, the Postal Service may, under suitable conditions, provide access to its database directly to a third party, which may then associate various information with the identified users. For example, the third party may associate accounts or transactions with the respective users based on the identifying information contained in the database, and thereafter, supply relevant account or transaction information to the Postal Service sorted by the User IDs.

The user may employ the linkage system of the invention from his or her home (e.g., via web browsers or clients accessible through the node 174) or from a postal station 176, 178. Thus, wherever the individual has access to the browser or client, the user can personally track and trace mail pieces for which he or she is identified as the sender or the intended recipient.

As discussed, the Postport system links information about mail pieces to a user ID, such that the user can, through his or her personal web page, personally track and trace mail pieces directed to or sent by the user. The system may also link other information to the user ID, such as, for example, information associated with one or more postal transaction sessions. The user can then start, continue and end a given postal transaction session at any time by communicating with the system through his or her personal web page from virtually any PC or any postal station terminal, or node, that is capable of communicating with the postal servers 170. The Postport system may, for example, link information for use in printing mailing labels, buying and printing postage, and so forth, to the assigned user ID, such that the user can later access the information to continue, resume or end a given postal transaction session from, for example, a terminal of a postal station 176, 178.

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Referring still to Fig. 10, a user begins a postal transaction session from, for example, a remote node, or PC 174, by logging on to the Postport system using the assigned user ID and an associated password, as discussed above with reference to Figs 1 and 2. The user selects the Virtual Post Office services and conducts a postal transaction session in which the user enters mailing address information, selects postage, and so forth in the appropriate data templates or wizards provided by the Postport system.

5 The user may then print mailing labels and/or postage from his or her home PC using the printer 186 and end the session. Alternatively, the user may continue the session and later print the labels and/or postage at the postal station 176 or 178 through the various workstation nodes 180, 182 when he or she is dropping off the mail pieces for delivery through the postal service.

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If the user continues the session, the Postport system retains the relevant postal transaction session information in a manner that is linked to the user's assigned user ID, as discussed below. When the user later logs on to the Postport system from, for example, a terminal 188 at the postal station 176 using the assigned user ID, the system transfers the session to the terminal. The user then continues to enter and/or edit the mailing address and postage information and/or print the labels and the postage before ending the session.

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The session transfer may be facilitated by assigning to a given user a coded physical identification token, such as a key fob 200 with a User ID included as a machine-readable barcode 201 (Fig 11). The user presents his or her physical identification token to a scanner that is connected to the system through, for example, the work station node 180. The system then prompts the user to supply his or her password and, after verification of the password, the system transfers the linked messages and thus the session to the terminal then in use. As discussed in more detail below, the system may also transfer the linked messages to the various other terminals in the same postal station, such that the user can readily transfer the session to another terminal that is connected to a printer, a postage meter, and so forth, by logging on using the assigned user ID. The user may thus take full advantage of the Postport system's virtual post office services, even if he or she does not have the appropriate hardware and/or software to print the labels and postage.

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The physical identification token discussed above can also be used to provide the user with access to other information that is linked by the system to the assigned user ID. For example, the user may use the token to gain access to the personal tracking and tracing tables 28 and/or 128 via a terminal 180, 182 at one of the postal stations 5 176, 178.

More specifically, the Postport system server 170 stores information provided by a user during a postal transaction session as a plurality of queued or stacked messages. If Escher Group's WebRiposte data base software is used, the messages are retained in a WebRiposte message store. The messages include an attribute or field associated with the assigned user ID, and one associated with a customer session identifier that corresponds to the particular session. The system also assigns to each message a unique message identifier that includes the postal office (if any) in which the message was generated; the terminal, or node, from which the message was generated; and a sequence number that corresponds to the order in which the messages were generated by 10 the node. The system also maintains an index, sorted by user identifier attribute, that allows the messages associated with a particular customer to be accessed quickly. Each time a user logs into the Postport system and selects the postal transaction session services or is identified to a postal workstation, the server checks the status of the associated message queue or store, at the server 170. If the terminal determines that the 15 user has continued a customer session, the terminal essentially reconstructs the session using the associated queued messages and presents to the user the screens, templates and/or wizards that allow the session to be continued from the point at which the user 20 last communicated with server.

If the user is communicating with the server 170 from a terminal in one of the 25 postal stations 176 or 178, the system may broadcast the associated messages to all of the terminals in the station. Each terminal then maintains an up-to-date message queue or store for the session that is associated with the assigned user ID. The user or a postal clerk may then readily transfer the session to any terminal in the postal station, to continue and/or complete the session, print out mailing labels, meter postage, and so 30 forth.

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The system encompasses variations of the components and operations discussed herein. For example, the system may assign more than one user ID to a given user, based on multiple postal addresses. The system then provides the user with the capability to individually track and trace mail pieces sent to or from the different addresses.

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What is claimed is:

## CLAIMS

- 1    1. A mail piece tracking system including:
  - 2       A. one or more servers for linking mail piece delivery status information with user identifiers and producing listings of the delivery status information for mail pieces directed to the respective users; and
  - 5       B. one or more browsers or client executables through which the respective users associated with the user identifiers access the delivery status information.
- 1    2. The mail piece tracking and tracing system of claim 1 wherein the one or more servers
  - 3       a. further associate with the delivery status information for a given mail piece a message from the mail piece sender, and
  - 5       b. include a link to the message in the listing of the delivery status information.
- 1    3. The mail piece tracking and tracing system of claim 1 wherein the one or more servers
  - 3       a. further associate with the delivery status information for a given mail piece related transaction information, and
  - 5       b. include a link to the transaction information in the listing of the delivery status information.
- 1    4. The mail piece tracking and tracing system of claim 1 wherein the one or more servers
  - 3       a. further associate information relating to the contents of the mail piece with the delivery status information, and
  - 5       b. include the information relating to the contents in a listing of the mail piece delivery status information.
- 1    5. The mail piece tracking and tracing system of claim 1 wherein the one or more servers includes in the mail piece delivery status information

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- 3           i.       a sender identifier,
- 4           ii.      a mail type identifier, and
- 5           iii.     a delivery service identifier.

1       6. The mail piece tracking and tracing system of claim 5 wherein the one or more  
2       servers further includes in the mail piece delivery status information related mes-  
3       sages from the sender and the delivery service.

1       7. The mail piece tracking and tracing system of claim 5 wherein the one or more  
2       servers further includes in the mail piece delivery status information links to on-line  
3       information provided by or associated with the sender.

1       8. A method for tracking and tracing mail pieces including the steps of:  
2           A. associating respective users with user identifiers;  
3           B. associating with the identified users mail pieces directed to or sent by the re-  
4           spective users;  
5           C. linking mail piece delivery status information relating to the respective mail  
6           pieces to the respective user identifiers;  
7           D. providing to a given user a listing of the respective mail pieces and the asso-  
8           ciated mail piece delivery status information that is linked to the user identi-  
9           fier that corresponds to the given user.

1       9. The method of tracking and tracing mail pieces of claim 8 wherein  
2           a. the step of linking mail piece delivery status information to the user identifi-  
3           ers includes updating the information, and  
4           b. the step of providing a listing of mail piece delivery status information in-  
5           cludes providing in the list the updated information.

1       10. The method of tracking and tracing mail pieces of claim 8 wherein the step of link-  
2       ing mail piece delivery status information with the user identifiers includes associ-  
3       ating therewith information that identifies the senders.

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- 1        11. The method of tracking and tracing mail pieces of claim 10 wherein the step of  
2           linking mail piece delivery status information with the user identifiers includes as-  
3           sociating therewith messages from the respective senders.
- 1        12. The method of tracking and tracing mail pieces of claim 8 wherein the step of link-  
2           ing mail piece delivery status information with the user identifiers includes associ-  
3           ating therewith information that identifies the respective mail piece delivery serv-  
4           ices.
- 1        13. The method of tracking and tracing mail pieces of claim 11 wherein the step of  
2           linking mail piece delivery status information to the user identifiers includes associ-  
3           ating therewith messages from the respective delivery services.
- 1        14. The method of tracking and tracing mail pieces of claim 8 wherein the step of pro-  
2           viding a listing includes providing a graphical interface connected to notify the user  
3           that corresponds to a given user identifier of the delivery status of mail pieces ad-  
4           dressed to the user.
- 1        15. The method of tracking and tracing mail pieces of claim 14 in which the interface  
2           is configured to display icons indicating different types of mail pieces addressed to  
3           the user.
- 1        16. The method of tracking and tracing mail pieces of claim 14 in which the interface is  
2           configured to display delivery dates associated with the mail pieces.
- 1        17. The method of tracking and tracing mail pieces of claim 16 in which the interface is  
2           configured to display the date a given the mail piece was logged into a postal deliv-  
3           ery service.

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- 1    18. The method of tracking and tracing mail pieces of claim 16 in which the interface is  
2        configured to display the date on which delivery of a given mail piece is expected  
3        to occur.
  
- 1    19. The method of tracking and tracing mail pieces of claim 16 in which the interface is  
2        configured to display the date on which delivery of given mail piece was made.
  
- 1    20. The method of tracking and tracing mail pieces of claim 14 in which the interface is  
2        configured to display information concerning the source of a given mail piece..
  
- 1    21. The method of tracking and tracing mail pieces of claim 14 in which the interface is  
2        configured to provide information concerning the contents of a given mail piece.
  
- 1    22. The method of tracking and tracing mail pieces of claim 14 in which the interface is  
2        configured to provide an image of at least a portion of the contents of a given mail  
3        piece.
  
- 1    23. The method of tracking and tracing mail pieces of claim 14 in which the interface is  
2        configured to provide an image of information associated with a given mail piece.
  
- 1    24. The method of tracking and tracing mail pieces of claim 23 in which the interface is  
2        configured to provide one or more messages associated with a given mail piece.  
3
  
- 1    25. The method of tracking and tracing mail pieces of claim 14 in which the interface is  
2        configured to provide one or more links to information provided by a sender of a  
3        given mail piece.

- 1    26. The method of tracking and tracing mail pieces of claim 25 wherein the information  
2        provided by the sender includes one or more of transaction history, account balance,  
3        and payment option information.
  - 1    27. Computer-readable memory comprising computer program instructions for use in  
2        providing mail piece tracking and tracing, the instructions when executed causing:
    - 3        A. one or more servers to link mail piece delivery status information with user  
4            identifiers and produce listings of the delivery status information for mail  
5            pieces directed to the respective users; and
    - 6        B. one or more browsers to provide access to the delivery status information  
7            linked to a given user identifier.
  - 1    28. The computer-readable memory of claim 27 further including computer program  
2        instructions that when executed cause the one or more servers to
    - 3        a. further associate with the delivery status information for a given mail piece  
4            a message from the mail piece sender, and
    - 5        b. include a link to the message in the listing of the delivery status information.
  - 1    29. The computer-readable memory of claim 27 further including computer program  
2        instructions that when executed cause the one or more servers to
    - 3        a. further associate with the delivery status information for a given mail piece  
4            related transaction information, and
    - 5        b. include a link to the transaction information in the listing of the delivery  
6            status information.
  - 1    30. The computer-readable memory of claim 27 further including computer program  
2        instructions that when executed cause the one or more servers to
    - 3        a. further associate information relating to the contents of the mail piece with  
4            the delivery status information, and
    - 5        b. include the information relating to the contents in a listing of the mail piece  
6            delivery status information.

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1       31. The computer-readable memory of claim 27 further including computer program  
2       instructions that when executed cause the one or more servers to include in the mail  
3       piece delivery status information  
4           a. a sender identifier,  
5           b. a mail type identifier, and  
6           c. a delivery service identifier.

1       32. The computer-readable memory of claim 31 further including computer program  
2       instructions that when executed cause the one or more servers to include in the mail  
3       piece delivery status information related messages from the sender and the delivery  
4       service.

1       33. The computer-readable memory of claim 31 further including computer program  
2       instructions that when executed cause the one or more servers to include in the mail  
3       piece delivery status information links to on-line information provided by or associ-  
4       ated with the sender.

1       34. A method of operating a computer system, the method including the steps of:  
2           A. associating a given user session with a user identifier;  
3           B. retaining messages relating to the status of the session at a server and in-  
4           cluding in each message a message sequence number and an attribute that is  
5           associated with the user identifier; and  
6           C. using the messages to continue the session from a point at which the session  
7           last communicated with the server, in response to the user identifier being  
8           presented at a node that communicates with the server.

1       35. The method of claim 34 further including a step of maintaining an index of the  
2       messages, the index being sorted by the attribute that is associated with the user  
3       identifier.

1       36. The method of claim 35 further including

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- 2        i.      a step of communicating through the session and providing information re-  
3                 lating to a mailing label;
- 4        ii.     in the step of retaining messages retaining messages that include the infor-  
5                 mation relating to the mailing label;
- 6        iii.    in the step of continuing the session presenting the retained information re-  
7                 lating to the mailing label; and
- 8        iv.    a step of ending the session by printing the mailing label in accordance with  
9                 the retained information.

- 1        37.    The method of claim 36 further including
  - 2            i.      in the step of communicating through the session providing information re-  
3                 lating to postage for a mail piece;
  - 4            ii.     in the step of retaining messages retaining messages that include the infor-  
5                 mation relating to the postage;
  - 6            iii.    in the step of continuing the session presenting the retained information re-  
7                 lating to the postage; and
  - 8            vii.   in the step of ending the session printing the postage in accordance with the  
9                 retained information.

- 1        38.    The method of claim 35 further including
  - 2            a.      a step of communicating through the session and providing information relating  
3                 to postage for a mail piece;
  - 4            b.     in the step of retaining messages retaining messages that include the informa-  
5                 tion relating to the postage;
  - 6            c.    in the step of continuing the session presenting the retained information relating  
7                 to the postage; and
  - 8            d.   a step of ending the session by printing the postage in accordance with the re-  
9                 tained information.

- 1        39. A method of operating a computer network including the steps of:

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- 2       A. associating a user session with a user identifier that is presented to gain access  
3            to information maintained by the network from a first node that communicates  
4            with the network;
- 5       B. retaining a queue of messages relating to the user session and associating the  
6            queue with the user identifier; and
- 7       C. in response to the user identifier being later presented at the first node or a sec-  
8            ond node that communicates over the network, continuing the user session at  
9            the first or second node by using the messages to present the session at the point  
10          at which the session last communicated with the server.

1       40. The method of claim 36 wherein the step of retaining a queue of messages includes  
2       indexing the messages by the user identifier.

1       41. The method of claim 37 wherein the step of retaining a queue of messages further  
2       includes maintaining the queue at each of a plurality of interconnected nodes, a given  
3       one of the interconnected nodes at which the user identifier is provided presenting the  
4       user session at the point at which the session last communicated with the server.

1       42. The method of claim 38 further including conducting the user session by commu-  
2       nicating over the network using a browser or a client executable.

1       43. The method of claim 37 wherein the step of presenting the user identifier includes  
2       providing a machine-readable code to a scanner that communicates with the node.

- 1       44. A method of operating a postal service computer system, the method including the  
2       steps of:
  - 3       A. associating a given user postal mailing label session with a user identifier;
  - 4       B. retaining messages relating to the status of the session at a server and including  
5            in each message a message sequence number and an attribute that is associated

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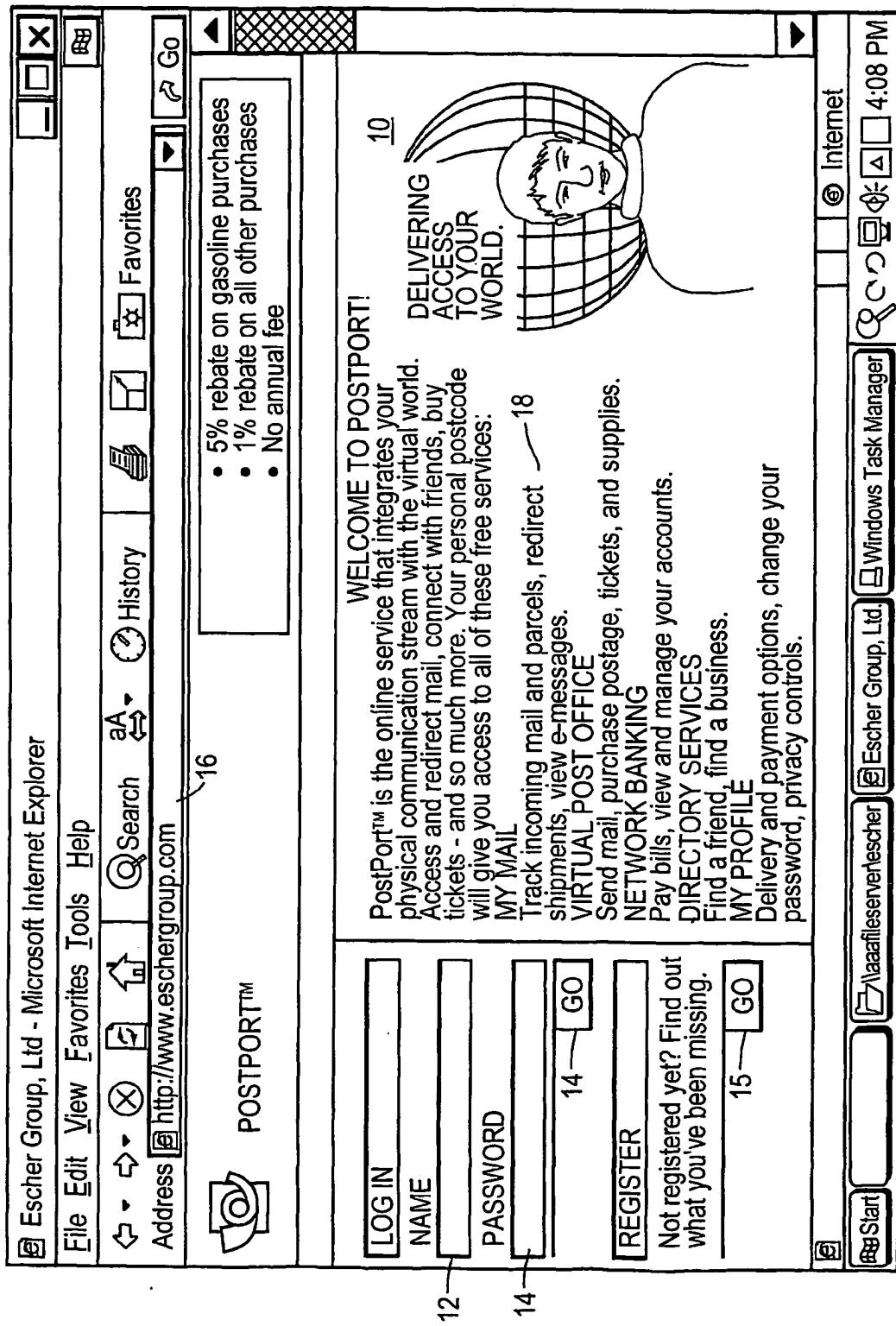
6       with the user identifier, the messages further including mailing label informa-  
7       tion provided through the session; and  
8       C. using the messages to continue the session from a point at which the session last  
9       communicated with the server by presenting the mailing label information pro-  
10      vided through the session, in response to the user identifier being presented at a  
11      node that communicates with the server.

1       45. The method of claim 44 further including a step of maintaining an index of the  
2       messages, the index being sorted by the attribute that is associated with the user identi-  
3       fier.

1       46. The method of claim 45 further including the step of ending the continued session  
2       by printing the mailing label in accordance with the retained information.

1       47. The method of claim 46 further including  
2       a. in the step of retaining messages retaining messages that include the information  
3       relating to postage;  
4       b. in the step of continuing the session presenting the retained information relating to  
5       the postage; and  
6       c. in the step of ending the session printing the postage in accordance with the retained  
7       information.

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1  
FIG.

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FIG. 2

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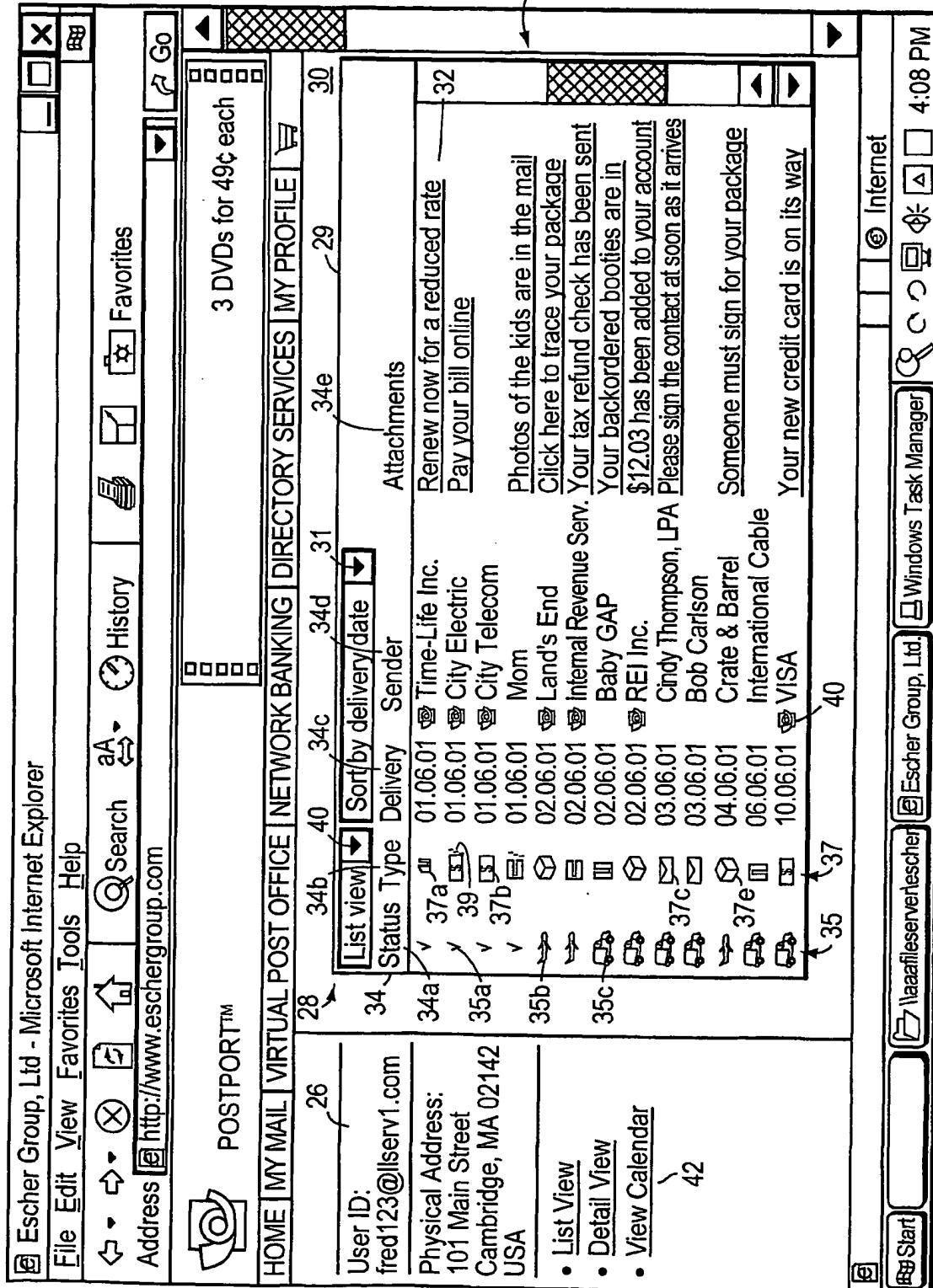


FIG. 3

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**POSTPORT™**

3 DVDs for 49¢ each

HOME | MY MAIL | VIRTUAL POST OFFICE | NETWORK BANKING | DIRECTORY SERVICES | MY PROFILE

List view ▶ Sort by delivery date ▶

| Status | Type | Delivery | Sender                 | Attachments                        |
|--------|------|----------|------------------------|------------------------------------|
| v      | ✉    | 01.06.01 | Time-Life Inc.         | TIME                               |
| v      | ✉    | 01.06.01 | City Electric          | View Time online                   |
| v      | ✉    | 01.06.01 | City Telecom           | Manage your                        |
| v      | ✉    | 01.06.01 | Mom                    | subscriptions to                   |
| →      | ✉    | 02.06.01 | Land's End             | Time Inc. magazines                |
| →      | ✉    | 02.06.01 | Internal Revenue Serv. | Review early for a                 |
| →      | ✉    | 02.06.01 | Baby GAP               | deep discount and                  |
| →      | ✉    | 02.06.01 | REI Inc.               | FREE gift!                         |
| →      | ✉    | 03.06.01 | Cindy Thompson, LPA    | Someone must sign for your package |
| →      | ✉    | 03.06.01 | Rob Carlson            | Your new credit card is on its way |
| →      | ✉    | 04.06.01 | Crate & Barrel         |                                    |
| →      | ✉    | 06.06.01 | International Cable    |                                    |
| ✉      | ✉    | 10.06.01 | VISA                   |                                    |

User ID:  
fred123@llserv1.com

Physical Address:  
101 Main Street  
Cambridge, MA 02142  
USA

List View  
Detail View  
View Calendar

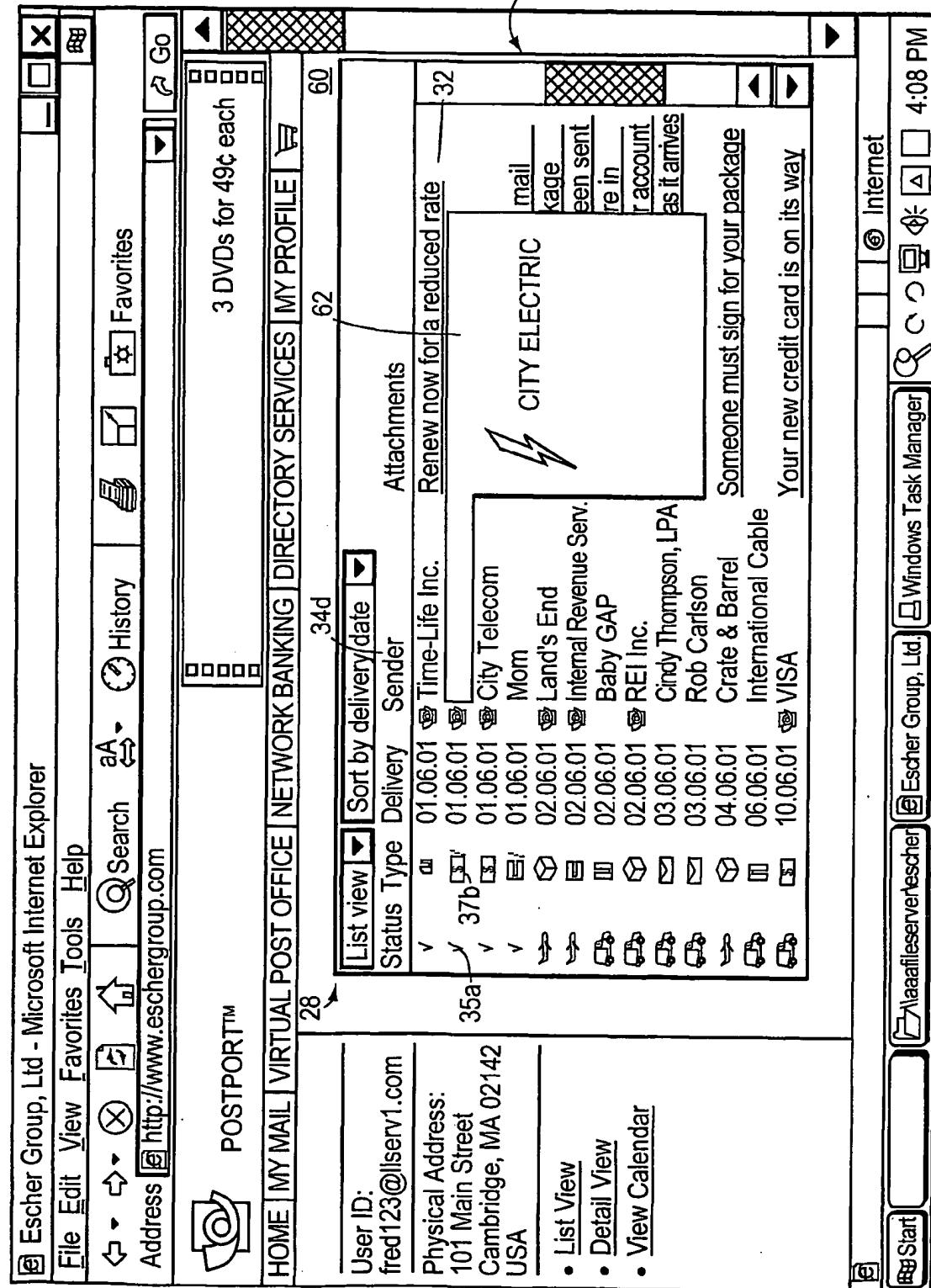
Start

Alaaafileservlescher Escher Group, Ltd. Windows Task Manager Internet

FIG. 4

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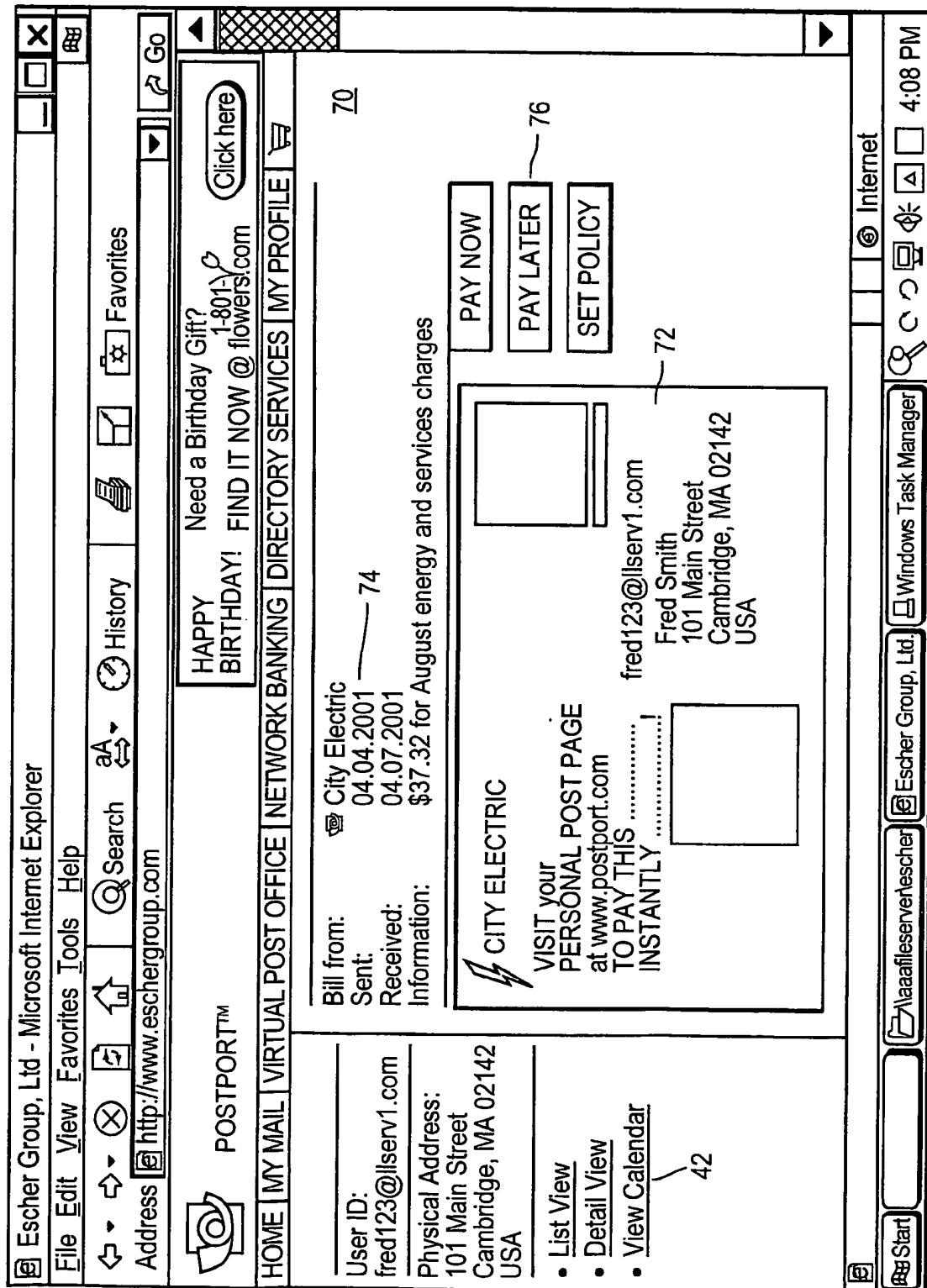


FIG. 6

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**POSTPORT™**

Address <http://www.eschergroup.com>

3 DVDs for 49¢ each

| HOME                |  |                     |  | MY MAIL         |  |          |  | VIRTUAL POST OFFICE   |  |           |  | NETWORK BANKING |  |           |  | DIRECTORY SERVICES |  |           |  | MY PROFILE |  |           |  |      |  |
|---------------------|--|---------------------|--|-----------------|--|----------|--|-----------------------|--|-----------|--|-----------------|--|-----------|--|--------------------|--|-----------|--|------------|--|-----------|--|------|--|
| User ID:            |  | fred123@llserv1.com |  | 26              |  | 128      |  | 134a                  |  | 134b      |  | 40              |  | 134c      |  | 31                 |  | 29        |  | 100        |  | 132       |  |      |  |
|                     |  |                     |  |                 |  |          |  |                       |  |           |  |                 |  |           |  |                    |  |           |  |            |  |           |  |      |  |
| Physical Address:   |  | 101 Main Street     |  | ✓               |  | Outbound |  | Sort by delivery date |  | Recipient |  | Memo            |  | Recipient |  | Memo               |  | Recipient |  | Memo       |  | Recipient |  | Memo |  |
| Cambridge, MA 02142 |  | USA                 |  | ✓               |  | ✓        |  | ✓                     |  | ✓         |  | ✓               |  | ✓         |  | ✓                  |  | ✓         |  | ✓          |  | ✓         |  | ✓    |  |
| List View           |  | Detail View         |  | View Calendar   |  | 42       |  |                       |  |           |  |                 |  |           |  |                    |  |           |  |            |  |           |  |      |  |
| • List View         |  | • Detail View       |  | • View Calendar |  | 42       |  |                       |  |           |  |                 |  |           |  |                    |  |           |  |            |  |           |  |      |  |
|                     |  |                     |  |                 |  |          |  |                       |  |           |  |                 |  |           |  |                    |  |           |  |            |  |           |  |      |  |

3 DVDs for 49¢ each

Internet

Windows Task Manager

Start

\\aaafileserver\test\cher

Escher Group, Ltd.

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**POSTPORT™**

Address <http://www.eschergroup.com>

HOME MY MAIL VIRTUAL POST OFFICE NETWORK BANKING DIRECTORY SERVICES MY PROFILE

Outbound ▶ Sort by delivery date ▶

| Status | Type | Delivery | Recipient         | Memo                       |
|--------|------|----------|-------------------|----------------------------|
| ✓      | ✉    | 27.04.01 | ✉ Cellular One    | May payment                |
| ✓      | ✉    | 27.04.01 | ✉ City Electric   | Paid electric bill for May |
| ✓      | ✉    | 27.04.01 | ✉ City Telecom    |                            |
| ✓      | ✉    | 28.04.01 | ✉ Land's End      | May payment                |
| ✓      | ✉    | 28.04.01 | ✉ Mom             |                            |
| ✓      | ✉    | 28.04.01 | Parking Clerk     | VISA credit \$75           |
| ✓      | ✉    | 29.04.01 | Baby GAP          | MBNA Visa                  |
| ✓      | ✉    | 29.04.01 | ✉ HSH Mortgage    | Received item              |
| ✓      | ✉    | 29.04.01 | Housing Authority | Accepted for return        |
| ✓      | ✉    | 30.04.01 | Jim Brett         | Cambridge P.O.             |
| ✓      | ✉    | 30.04.01 | American Express  | Return authorization       |
| ✓      | ✉    | 30.04.01 | Megan Smith       | Land's End Returns         |
| ✓      | ✉    | 30.04.01 | ✉ MBNA VISA       | Cambridge P.O.             |
|        |      |          |                   | Date                       |
|        |      |          |                   | 28.04.01                   |
|        |      |          |                   | 26.04.01                   |
|        |      |          |                   | 25.04.01                   |
|        |      |          |                   | 22.04.01                   |
|        |      |          |                   | 16.04.01                   |
|        |      |          |                   | 18.04.01                   |
|        |      |          |                   | 17.04.01                   |
|        |      |          |                   | 14.04.01                   |
|        |      |          |                   | 10.04.01                   |
|        |      |          |                   | 09.04.01                   |
|        |      |          |                   | 08.04.01                   |
|        |      |          |                   | 07.04.01                   |
|        |      |          |                   | 06.04.01                   |
|        |      |          |                   | 05.04.01                   |
|        |      |          |                   | 04.04.01                   |
|        |      |          |                   | 03.04.01                   |
|        |      |          |                   | 02.04.01                   |
|        |      |          |                   | 01.04.01                   |

ORDER HISTORY

| Activity              | Location             | Date     |
|-----------------------|----------------------|----------|
| VISA credit \$75      | MBNA Visa            | 28.04.01 |
| Received item         | Land's End Receiving | 28.04.01 |
| Accepted for return   | Cambridge P.O.       | 26.04.01 |
| Return authorization  | Land's End Returns   | 25.04.01 |
| Delivered             | Cambridge P.O.       | 22.04.01 |
| Out for delivery      | Cambridge P.O.       | 16.04.01 |
| Item accepted         | P.O. Parcel Center   | 18.04.01 |
| Item out for delivery | Land's End Shipping  | 17.04.01 |
| Visa charge \$79      | Land's End           | 14.04.01 |
| Item available        | Land's End Warehouse | 14.04.01 |
| Item backordered      | Land's End Inventory | 09.04.01 |
| Order received        | Land's End web site  | 09.04.01 |

User ID:  
fred123@lliserv1.com

Physical Address:  
101 Main Street  
Cambridge, MA 02142  
USA

- [List View](#)
- [Detail View](#)
- [View Calendar](#)

Start Escher Group, Ltd. Windows Task Manager Internet 4:08 PM

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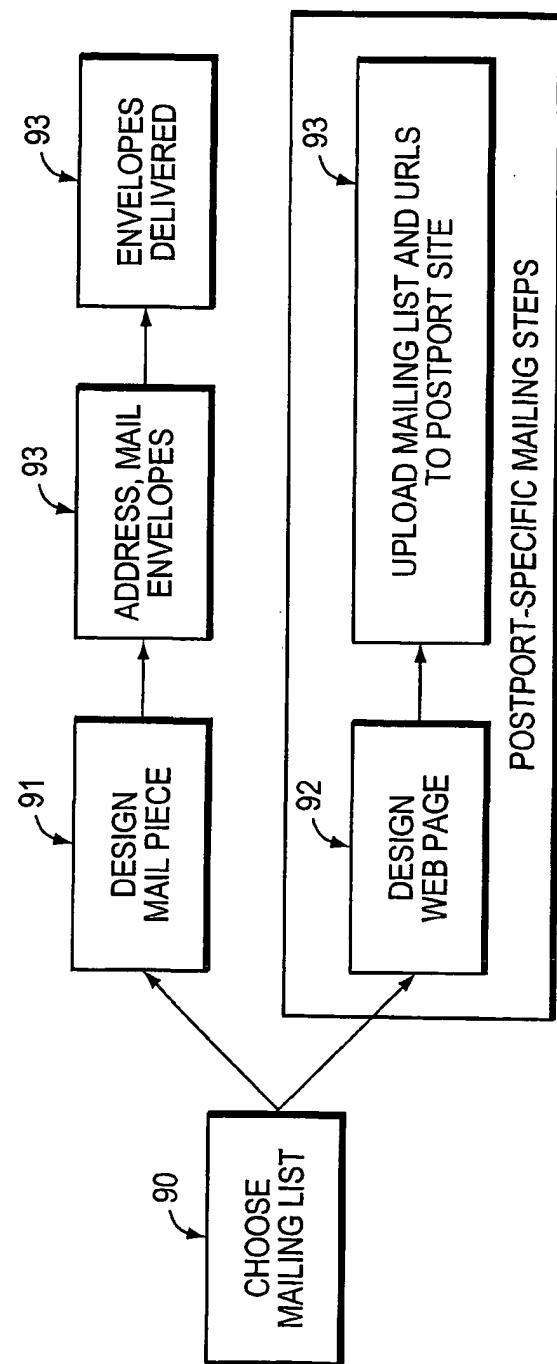


FIG. 9

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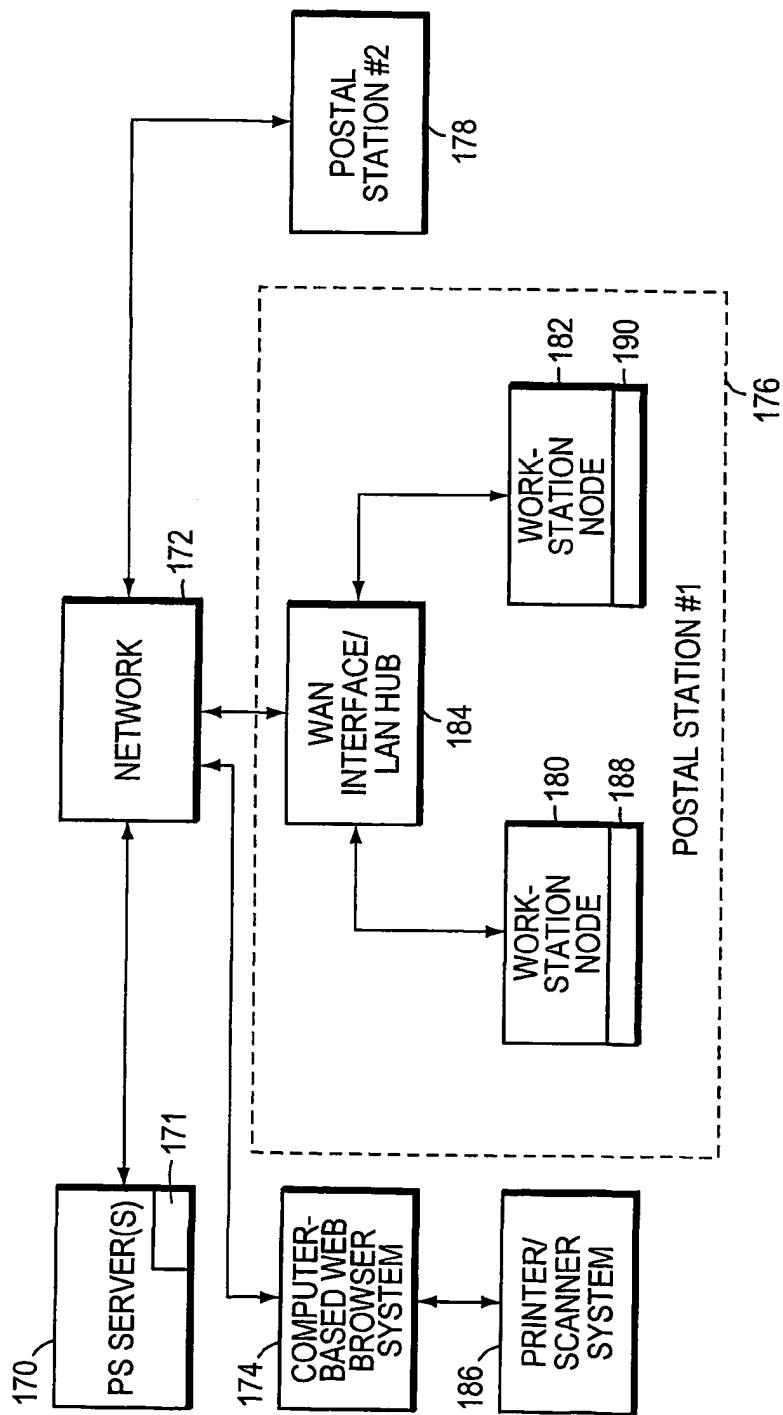
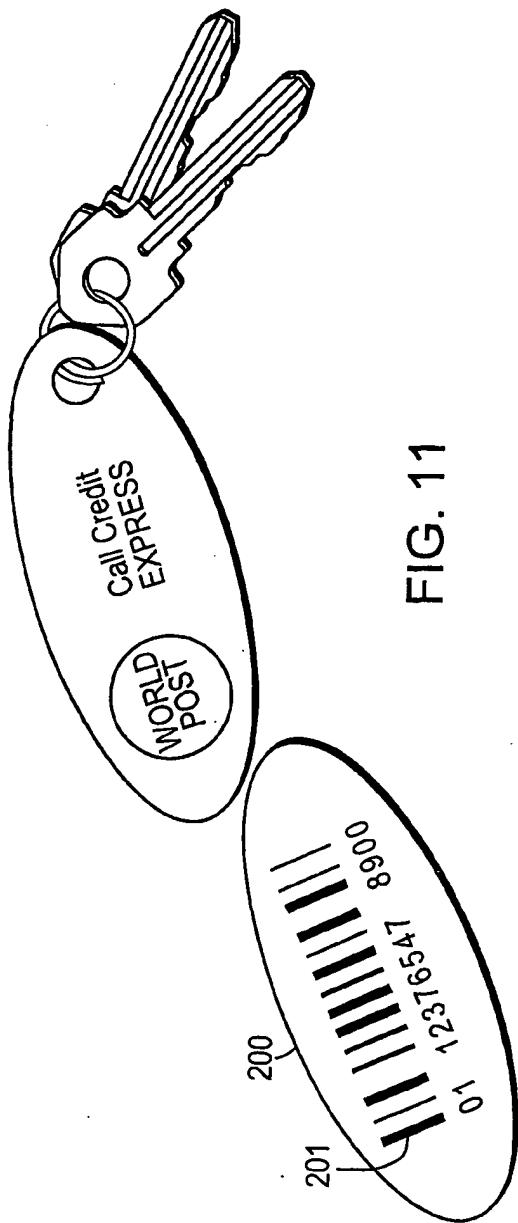


FIG. 10

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**PATENT COOPERATION TREATY**  
**PCT**

DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT

(PCT Article 17(2)(a), Rules 13ter.1(c) and Rule 39)

|   |  |   |
|---|--|---|
| Applicant's or agent's file reference<br><b>103140-12PCT</b>  | IMPORTANT DECLARATION  | Date of mailing(day/month/year)<br><b>26/11/2001</b>          |
| International application No.<br><b>PCT/US 01/ 30443</b>  | International filing date(day/month/year)<br><b>28/09/2001</b> | (Earliest) Priority date(day/month/year)<br><b>29/09/2000</b> |
| International Patent Classification (IPC) or both national classification and IPC<br><b>G06F17/60</b> |  |   |
| Applicant<br><b>THE ESCHER GROUP, LTD.</b>  |  |   |

This International Searching Authority hereby declares, according to Article 17(2)(a), that no international search report will be established on the international application for the reasons indicated below

1.  The subject matter of the international application relates to:
  - a.  scientific theories.
  - b.  mathematical theories
  - c.  plant varieties.
  - d.  animal varieties.
  - e.  essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
  - f.  schemes, rules or methods of doing business.
  - g.  schemes, rules or methods of performing purely mental acts.
  - h.  schemes, rules or methods of playing games.
  - i.  methods for treatment of the human body by surgery or therapy.
  - j.  methods for treatment of the animal body by surgery or therapy.
  - k.  diagnostic methods practised on the human or animal body.
  - l.  mere presentations of information.
  - m.  computer programs for which this International Searching Authority is not equipped to search prior art.
  
2.  The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
 

the description       the claims       the drawings
  
3.  The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
 

the written form has not been furnished or does not comply with the standard.
   
 the computer readable form has not been furnished or does not comply with the standard.
  
4. Further comments:

|   |  |
|---|--|
| Name and mailing address of the International Searching Authority<br><br>European Patent Office, P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Authorized officer<br><b>Lucia Van Pinxteren</b> |
|---|--|

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

The claims relate to subject matter for which no search is required according to Rule 39 PCT. Given that the claims are formulated in terms of such subject matter or merely specify commonplace features relating to its technological implementation, the search examiner could not establish any technical problem which might potentially have required an inventive step to overcome. Hence it was not possible to carry out a meaningful search into the state of the art (Art. 17(2)(a)(i) and (ii) PCT; see Guidelines Part B Chapter VIII, 1-6).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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